Photorefractive Photonics and Beyond



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Multifunctional materials for emerging technologies

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This presentation focuses on structure property/relationships in advanced materials, emphasizing multifunctional systems that exhibit multiple functionalities. Such systems are then used as building blocks for the fabrication of various emerging technologies. In particular, nanostructured materials synthesized via the bottom–up approach present an opportunity for future generation low cost manufacturing of devices [1]. We focus in particular on recent developments in solar technologies that aim to address the energy challenge, including third generation photovoltaics, solar hydrogen production, luminescent solar concentrators and other optoelectronic devices. [2-40].

References

[1] J. Phys. Cond. Matt. 16, S1373 (2004); [2] Adv. Mater. 22, 1741 (2010); [3] J. Am. Chem. Soc. 132, 8868 (2010); [4] Adv. Mater. 23, 1724 (2011); [5] Appl. Phys. Lett. 98, 202902 (2011); [6] Chem. Comm. 48, 8009 (2012); [7] Adv. Func. Mater. 22, 3914 (2012); [8] Nanoscale 4, 5588 (2012); [9] Nanoscale 5, 873 (2013); [10] J. Power Sources 233, 93 (2013); [11] Chem. Comm. 49, 5856 (2013); [12] J. Phys. Chem. C 117, 14510 (2013); [13] Nature Phot. 9, 61 (2015); [14] Nanoscale 8, 3237 (2016); [15] Nano Energy 27, 265 (2016); [16] Small 12, 3888 (2016); [17] Nanotechnology 27, 215402 (2016); [18] J. Mater. Chem. C 4, 3555 (2016); [19] Sci. Rep. 6, 23312 (2016); [20] Adv. En. Mater. 6, 1501913 (2016); [21] Nanoscale 8, 4217 (2016); [22] Adv. Sci. 3, 1500345 (2016); [23] Small 11, 5741 (2015); [24] Small 11, 4018 (2015); [25] J. Mater. Chem. A 3, 2580 (2015); [26] Nano Energy 34, 214 (2017); [27] Nano Energy 35, 92 (2017); [28] Adv. Func. Mater. 27, 1401468 (2017); [29] Adv. En. Mater. 8, 1701432 (2018); [30] Chem 3, 229 (2017); [21] J. Chakrabartty et al., Nature Phot. 12, 271 (2018); [32] Nano Energy 55, 377 (2019); [33] Nanoscale Horiz. 4, 404 (2019); [34] Appl. Cat. B 250, 234 (2019); Adv. Func. Mater. 29, 1904501 (2019); [35] ACS Photonics 6, 2479 (2019); [36] Appl. Cat. B 264, 118526 (2020); [37] Adv. Func. Mater. 30, 1908467 (2020); [38] J. Mater. Chem. A 8, 20698 (2020); [39] Nano Energy 79, 105416 (2021); [40] Nano Energy 81, 105626 (2021).

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